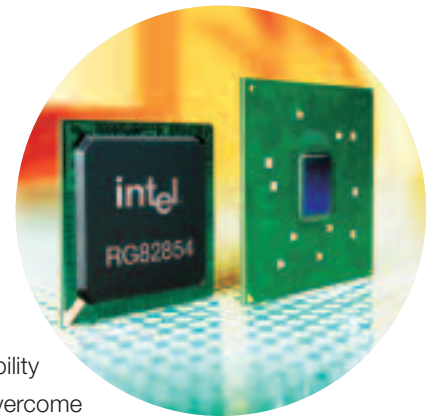




# Intel® 854 Chipset for Consumer Electronic Applications and Intel® 854 Development Platform

## Product Overview

The Intel® 854 chipset is a building block for consumer electronics platforms including IP-Digital Set Top Boxes (IP-DSTB) and Digital Media Recorder (DMR) devices. This chipset adds support for up to 2 GB of DDR 333 MHz system memory, a 400 MHz system bus to support the Intel® Celeron® M processor, and an integrated graphics engine that can be used for graphical user interfaces.



The Intel® 854 Development Platform showcases the capability of the Intel® 854 chipset while enabling manufacturers to overcome many of the traditional design constraints which can impact the development of consumer electronic devices. This 6-layer development board supports 512 MB of DDR 333 MHz memory on board and the 600 MHz ULV Intel® Celeron® M processor, a configuration that provides a low power, fan-less design. The development platform is capable of providing the processing performance needed for IP-DSTB and DMR applications to perform software-based video decoding and provide networked digital media services.

## Intel® 854 Chipset Product Highlights

- Designed to work with the 600 MHz ULV Intel® Celeron® M processor
  - 400 MHz processor bus
- Support up to 2 GB of 333 MHz DDR memory
- Support up to 6 USB 2.0/1.1 ports
- Support up to 6 PCI slots
- Dual Ultra ATA/100 controllers
- LAN connect interface (LCI) provides integrated 10/100 Mbps Ethernet
- AC'97 2.3 controller delivers 20-bit audio
- Integrated graphics utilizing Intel® Extreme Graphics 2 technology
  - Digital Video Output (DVO) for blended graphics and video

## Designed to Work with Intel Processors

The Intel® 854 chipset supports a 600 MHz Ultra Low Voltage Intel® Celeron® M processor. This processor uses advanced 0.13-micron process technology with copper interconnects to offer high performance and very low power consumption. Platforms based on this processor and chipset require only a passive (fan-less) thermal solution.

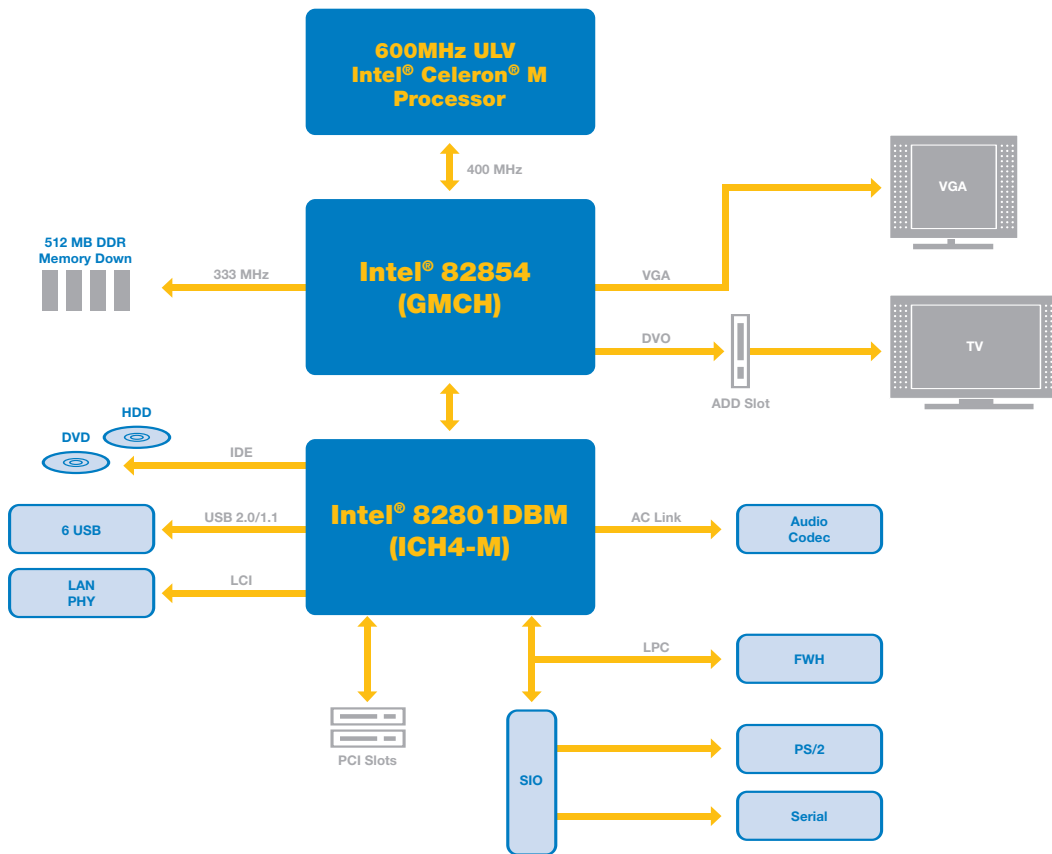


Figure 1 – The Intel® 854 Development Platform

## High Performance Building Blocks

The Intel® 854 chipset supports a high performance integrated graphics engine and DDR system memory that provides an increase in memory bandwidth over previous generations of Intel building blocks used in dedicated consumer electronics designs.

## Flexible I/O

The Intel® 854 chipset flexibly supports the varied I/O and peripheral connectivity requirements of consumer electronic devices. The chipset supports up to six USB 2.0/1.1 ports, two Ultra ATA/100 (IDE) channels for disk drives and storage devices, in addition to integrated 10/100 LAN support. High-performance I/O, coupled with integrated graphics and a low-power processor, make the Intel® 854 chipset an ideal choice for the design of consumer electronics devices.

## Intel® 854 Development Platform

The Intel® 854 Development Platform helps accelerate designs based on the Intel® 854 chipset and a 600 MHz ULV Intel® Celeron® M processor. When combined with an operating system, BIOS, and application software, the platform enables consumer electronics device manufacturers to bring new products to market. By choosing Intel® architecture to design IP-DSTBs, DMRs, or other media-centric products, manufacturers can adapt to the rapidly changing requirements of service providers who must provide compelling and differentiated services to their customers.

This scalable platform helps manufacturers minimize overall cost by addressing the design complexity of consumer electronics devices and by providing the performance to handle video decoding and other functionality in software. This capability can simplify hardware designs and minimize bill-of-materials costs. The development platform includes a 6-layer printed circuit board with 512 MB of DDR on-board.

Memory layout and configuration provide flexibility to manufacturers to implement their own designs. In addition to hardware optimizations, the platform provides the performance to support a variety of software CODECs including MPEG-2, MPEG-4.2, MPEG-4.10 (H.264), and Microsoft\* Windows\* Media 9.

### Minimize Time-to-Market

The Intel® 854 Development Platform kit consists of a motherboard, CPU, ADD card, supporting hardware and platform design guide. The platform also includes a Microsoft\* Windows\* CE 5.0 board support package that includes drivers for every component in the design, BIOS, and various electronic copies of technical collateral that can be used to accelerate the design and product development process. For information on how to obtain the Intel® 854 Development Platform kit contact your Intel representative.

### Operating System

The Intel® architecture software environment is familiar to most programmers. The Intel® 854 Development Platform is validated with the Microsoft\* Windows\* CE 5.0 operating system.

### Intel® 854 Development Platform Highlights System Components

- 600 MHz ULV Intel® Celeron® M processor
  - 400 MHz processor bus
  - Passive heat sink thermal solution with no CPU fan required
- Intel® 854 Graphics Memory Controller Hub (GMCH)
  - 512MBytes of 333 MHz DDR memory on board
- Intel® 82801DBM I/O Controller Hub 4 Mobile (ICH4-M) with integrated LAN, USB 2.0/1.1, PCI, AC'97, and Ultra ATA/100 support

### Audio and Video Components

- TV output via external ADD (AGP digital display) card with Conexant\* CX28892 scan converter or Focus Enhancements\* FS454
- SigmaTel\* STAC9758 AC'97 audio codec supporting stereo output and S/PDIF digital audio output

### Video Output Capabilities

- VGA connector
- 1 Composite RCA connector via ADD card
- 1 S-video connector via ADD card
- 1 DVI-D connector via ADD card
- 1 Video Output Combination Cable
  - Composite output (1 RCA connector)
  - S-video output (1 S-video connector)
  - Component output (3 RCA connectors)

### Audio Output Capabilities

- Analog Stereo Output
  - Left/Right RCA audio connectors
- Digital Output using S/PDIF
  - TosLink (optical) connector
  - RCA (coaxial) connector

### Peripheral Connectors

- 4 USB 2.0/1.1 ports on external connectors
- 2 USB 2.0/1.1 ports on internal header
- 1 RJ-45 10/100 Ethernet port
- 1 RS-232 internal header
- 2 PS/2 connectors for keyboard and mouse

## Intel® 854 Chipset Line Card

Product	Product Code	Package	Features
<b>Graphics and Memory Controller Hub (GMCH)</b>	RG82854	FCBGA-732	-Intel® Accelerated Hub Architecture -2D/3D Intel® integrated graphics -Support for up to 2GB DDR -Support for 400MHz processor bus
<b>I/O Controller Hub 4 Mobile (ICH4-M)</b>	RG82801DBM	BGA-421	-Direct connection to the GMCH with Intel's accelerated hub architecture -Support for 32-bit PCI -2 IDE controllers with ATA/100 -6 USB 2.0/1.1 ports -AC'97 controller -Integrated LAN connect interface

## Intel Access

<b>Developer's Site</b>	developer.intel.com
<b>Embedded Intel® Architecture Home Page</b>	www.intel.com/design/intarch
<b>Intel® Technical Documentation Center</b>	www.intel.com/go/techdoc (800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada) International locations please contact your local sales office.
<b>General Information Hotline</b>	(800) 628-8686 or (916) 356-3104 5 a.m. to 5 p.m. PST

**For more information, visit the Intel Consumer Electronics home page at:  
[www.intel.com/go/consumerelectronics](http://www.intel.com/go/consumerelectronics)**

### US AND CANADA

Intel Corporation  
Robert Noyce Bldg.  
2200 Mission College Blvd.  
P.O. Box 58119  
Santa Clara, CA 95052-8119  
USA

### EUROPE

Intel Corporation (UK) Ltd.  
Pipers Way  
Swindon  
Wiltshire SN3 1RJ  
UK

### ASIA-PACIFIC

Intel Semiconductor Ltd.  
32/F Two Pacific Place  
88 Queensway, Central  
Hong Kong, SAR

### JAPAN

Intel Kabushiki Kaisha  
P.O. Box 115  
Tsukuba-gakuen  
5-6 Tokodai, Tsukuba-shi  
Ibaraki-ken 305  
Japan

### SOUTH AMERICA

Intel Semicondutores do Brazil  
Rue Florida, 1703-2 and CJ22  
CEP 04565-001 Sao Paulo-SP  
Brazil

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<sup>1</sup> MPEG is an international standard for video compression/decompression promoted by ISO. Implementations of MPEG CODECs, or MPEG enabled platforms may require licenses from various entities, including Intel Corporation.

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